

4

THE
Advantages and Importance
OF A
NEW GEOLOGICAL SURVEY
OF PENNSYLVANIA.

To HON. JAMES H. WEBB, *Representative from
Bradford County, Pa.:*

DEAR SIR:—It is greatly to be regretted that from not properly understanding the importance and utility of a Geological survey, the bill now before the Legislature for that purpose, meets with considerable opposition. Certainly if the work of geologists is needed anywhere, it is in Pennsylvania, which is not equalled by any State in the Union in the quality, variety and extent of her mineral resources. But these are really of no value so long as they are unknown. The light of science must be let in upon them to make them known to the world, or they might as well have had no existence.

In Hazard's Register, Vol. V, may be seen a minute account of Luzerne County, Pennsylvania, written in the year 1817 by I. A. Chapman, a man of intelligence and good literary abilities, and a citizen of Wyoming Valley. It is remarkable that the existence of anthracite coal in the county is merely mentioned, a small quantity being yearly sent down the river in arks in times of freshets. It was never burnt

in stoves or grates previous to 1808. In the year 1873, that county sent to market 10,047,241 tons of this coal, and consumed at home 1,675,000, in all, eleven and three-quarter millions of tons. To what are we indebted for this miraculous change?—It is chiefly owing to the knowledge attained and spread abroad in the community in regard to the geological formation and the useful qualities of this mineral.

We do not give sufficient credit to the men of science for the general spread of intelligence among the people. In fact, they are the suns of knowledge whose light penetrates into the darkest recesses without our considering whence it comes. Much of our knowledge of the qualities of various soils, of the existence or non-existence of useful minerals in certain localities, the methods for their discovery, production and use is derived immediately from tradition, from being talked about, reported in newspapers, and so passed from hand to hand. If we had time to trace it back to its origin, we would find it was some thoughtful man of books, who by study and intelligent observations of nature

had made these discoveries and communicated them to the world. A rude, ignorant hunter on the mountains above Mauch Chunk, overtaken by night, stumbled in the dark over a piece of black-stone, and thus discovered on the surface the mammoth coal bed.

But the structure of our wonderful anthracite coal fields, and consequently the proper method of mining them were never understood until their secrets were discovered and their labyrinths revealed by Whelpley, Lesley, Sheaffer and others of the immortal corps of Rogers' Geological survey.

Their work is to the mineral resources of Pennsylvania what the Bible is to our moral world, which, while it is little quoted in courts and legislatures, yet furnishes the foundation and frame-work for all law and jurisprudence. It is a popular error that the proposed survey is only desired by the wealthy coal operators, and that they alone will be benefitted by it. This is far from being the case, for while there are among the class mentioned, many men of enlarged and liberal views in regard to the advantages of a new Geological Survey, yet the anthracite regions require comparatively little aid now from State geologists. The work they needed was done for them from 1836 to 1842 by the former survey, and behold the result! Look at the city of Scranton, which has risen as it were, in a day; look at Wilkesbarre and Carbondale; at Pottsville and the teeming population of the anthracite region. We might add, look at the cities of Philadelphia and New York, at all New England, and all the Middle and Western States, deriving the material which supports their industrial life from the Pennsylvania coal mines.

The bituminous coal regions of Western and Northern Pennsylvania do require further investigation. Many parts of them during the former survey, thirty or forty years ago, being very thinly peopled, and having then little prospect of a coal trade, were imperfectly surveyed. In the Pittsburgh region it is a matter of doubt and in-

quiry among the people whether there are other beds of coal below the Pittsburgh seam, if so whether they are valuable, and at what depth they may be found. There is no doubt there are such lower beds, but their character, value and position require examination by competent geologists.

The Connelsville coke region which has developed a new and remarkable branch of industry, requires the best chemical studies, to discover why its coke is superior to all others, and whether the sulphurous coals of other districts are capable of improvement by proper mechanical appliances. The State Geologists of Ohio have by chemical experiments proved that the presence or absence of iron with the sulphur in certain coals has an important bearing on their value.

The coal regions of northern and northwestern Pennsylvania were an almost untrodden wilderness when explored by our former State Geologists. The results they attained as to the structure of the field were of the highest importance and value. The mining and prospecting that has since been done will now give a better opportunity of studying the stratification and economical value of the several coal beds.

Explorations of this kind to be useful must be made on an extensive scale. No ordinary land owner can be expected to incur the expense, while perhaps a whole county would derive the benefit. It would be a reasonable to expect each farmer to build the portion of a railroad through his own land. There are some things in all civilized countries which we expect our government to do for us at the public expense. There is no more appropriate work for the State to undertake than this. For a great State like Pennsylvania, where free schools have been in operation for nearly forty years, to refuse any longer to make a thorough mineralogical and geological survey as recommended by two successive governors, will simply prove that her people are grossly misrepresented in the Senate and House of Representatives.

It is said that Spain possesses one of the richest coal fields in Europe. Coal is there dug out on a small scale by lazy Spaniards, and carried in sacks on the backs of mules over rough mountain paths impassible for wheeled carriages. There are no printed books containing any reliable description by competent persons, of these buried treasures. The false pride of the Hidalgo is superior to any such menial pursuits as mining coal or manufacturing iron. A traveler in Spain reports that he saw but one man in the country who was doing anything, and he was falling out of a window. Do our representatives wish that Pennsylvania shall be the Spain of America? No; we live in a different atmosphere and have a different food in our veins.

The United States Government is giving a noble example to all the States. If the present system of geographical and geological surveys under Dr. Hayden are continued the world will soon know more of the geology, topography, mineral and agricultural resources of the deserts of Montana, Idaho, Colorado, Nevada and Arizona, than we do of some of the counties of Pennsylvania.

Our neighbors in Ohio have just finished a noble geological survey by Dr. Newberry. As mere advertisement of her coal and iron the State has been repaid the expense many fold. Her remarkable Straitsville coal field, with its great bed, twelve feet thick, has become the scene of an active development, which has added greatly to the wealth, population and prosperity of the State. The Hocking Valley and other districts have received a new impulse, and the agricultural and other interests of the State have also been greatly benefitted.

Indiana has been making a survey since the year 1869, and all the world has heard from Dr. Cox and Professor Foster of the now famous block-coal region of Brazil.

Illinois, too, has completed her survey and its results are given to the world in good style. The work was commenced in 1857 and until then there was no correct knowledge of her great coal fields the number of

coal beds and their depth below the surface.

All the new Western States show an activity and a wide-awake regard to their interests which puts to shame the supineness of our own State. Iowa has made two geological surveys; the first one of the eastern part of the State, which alone was settled in 1858, and a later one in 1866-9 of the whole State.

But the mineral producing districts are not the only ones which would be benefitted by this measure. Pennsylvania contains all the formations of rock older than the coal, and they are all exposed in the eastern part of the State. She has a wonderful variety in her geology, and some of the formations have been very slightly studied. To employ competent scientific men to visit each county and give the people useful, practical information in regard to the agricultural resources would be of essential benefit. I knew a farmer in Adams county who was hauling lime for manuring his land a distance of many miles, from Cumberland county, when he was visited by Mr. Trego, one of the State Geologists who pointed out to him a bed of limestone on his own farm. It is well known that the Montour Hills in Columbia county, containing the valuable iron ore beds, were sold for taxes, as worthless land before the iron ore was recognized; and the black band iron ore of Scotland was always thrown out with the slate from the coal mines, until a scientific man pointed out its value, when it became the basis of the great iron works of that country.

The experienced eye of a good geologist discovers mineral wealth which would otherwise remain unknown and unproductive.— Finally, it may be well to mention, that the labor which the State can command for this purpose, is the cheapest of all work. It is well known that scientific men freely give the results of their labors to the world expecting little in return except to enjoy the consciousness of having added to the sum of human knowledge. They consider themselves fortunate if they even receive the

credit to which they might be justly entitled. Even in this money-making age and country there are some enthusiasts for science who devote themselves to the increase of knowledge and the good of mankind. Far better pay can be had for the ordinary, professional, mechanical and mercantile pursuits than any State gives for geological work. Yet these men, after years of preparation by study and practice in the field, work out results which add millions to the national wealth of the country, and which is far better, furnish honest work and all the blessings of civilization to multitudes of people throughout all time to come.

Not being myself a professional geologist, and having much more profitable employment, I have no interest in the proposed survey except that of a citizen, whose stud-

ies* and pursuits have led him to the deliberate conclusion, that no State in the Union so much needs a geological survey as ours, and that there is no other way in which the same sum of money can be spent with so much benefit to the people of the whole State.

JAMES MACFARLANE.

TOWANDA, Pa., April, 1874.

* The writer is the author of a new work on Coal entitled THE COAL REGIONS OF AMERICA, their Topography, Geology and Development, with a colored Geological Map of Pennsylvania, a railroad map of all the coal regions, and numerous other maps and illustrations. By James Macfarlane D. Appleton & Co., New York, 1873. 8vo. pp. 700 \$5.00. It has received high praise from our scientific men and journals at home, and from the British Quarterly Review, the Saturday Review, the Geological Magazine, and others of the best critics in England.